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(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

2945

K/EM-454

**SANITIZED VERSION OF LONG-RANGE PLANT EFFLUENTS
(3/19/56)**

(SANITIZED VERSION OF SRD DOCUMENT # K/CR-378)

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

May 28, 1996

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

This document has been approved for release
to the public by:

John F. Porter 6/25/96
Technical Information Officer Date
Oak Ridge K-25 Site

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INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY
A Division of Union Carbide and Carbon Corporation

E-9 (9)

Mr. K. W. Bahler

Plant: ORGDP

Date: March 19, 1956

Subject: Long-Range Plant Effluents

Copies To:

Dr. H. F. Henry ✓

K/cd 224

Attached are data furnished by a committee engaged in extension of the work described in the

Carbide and AEC were invited to postulate on the origin of the material measured. It is not anticipated that ORGDP will supply any written material unless subsequently requested to do so by AEC.

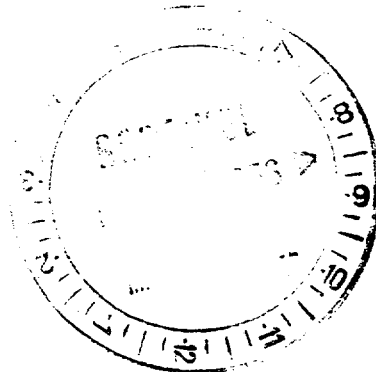
W. L. Richardson
W. L. Richardson

WLR:mrh

Attachment
Memo of Meeting held
3/14, prepared by Henry

No RC

~~CONFIDENTIAL~~
1956/3/15
Date



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~~SECRET~~

E 9 (9)

MEMO TO FILES

SUBJECT: Meeting on Long-Range Plant Effluents

PRESENT: K-25 - H. F. Henry, D. M. Lang, W. L. Richardson, F. R. Vanstrum
AEC - Walter Koester, H. J. McAlduff

Argonne National Laboratory - Martin H. Studier
Knolls Atomic Power Laboratory - Henry W. Alter

Data concerning Oak Ridge Area Effluents

1. Pine needles taken from trees in the open.

	Distance	U-234(%U)	U-235(%U)	U-236(%U)	Total U
	(miles)	Ash	Ash Leach*	Ash	$\mu\text{g}/(10-20) \text{ gm. needles}$
a. NE(toward Kingsport)					

- b. West
- c. Normal
Uranium

* Needles leached prior to ashing.

2. Water

Location	U-234(%U)	U-235(%U)	U-236(%U)	$\mu\text{g U/ml.}$
Poplar Creek 1500 ft. NE K-25	0.0117	1.87	0.0158	0.11

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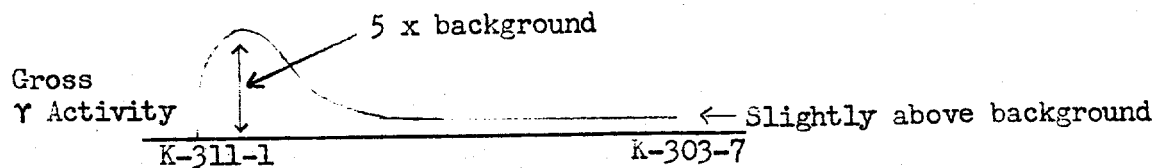
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- 2 -

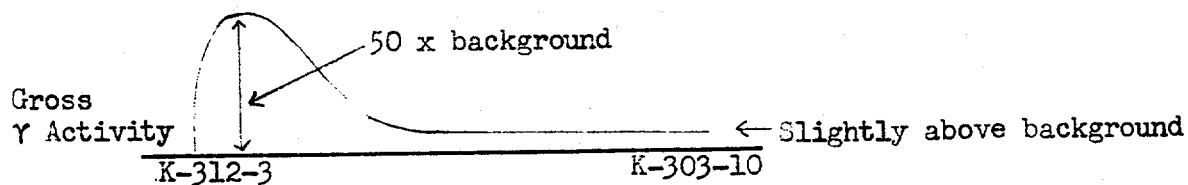
3.

Scintillation counters used - background set at 0.01 - 0.001 mr./hr.

a. Directly over one branch of K-25 "U". (Drawing not to any scale.)



b. Directly over other branch of K-25 "U"



H. F. Henry

H. F. Henry

Safety, Fire, and Radiation Control

HFH:mh
3-14-56

Meeting Date 3-14-56

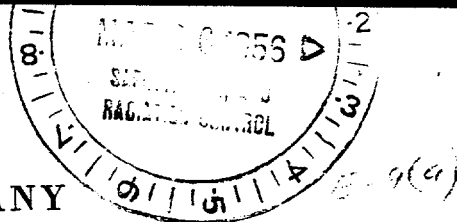
cc: Richardson - 2
Becker - 1

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- 4 -

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~~INTER-COMPANY CORRESPONDENCE~~



UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. W. Y. Gissel
ORNL

Plant: Oak Ridge Gaseous Diffusion

Date: March 23, 1956

SECRET

Copies To: Mr. L. B. Emlet
Mr. W. L. Richardson

Subject: Inspection Project,

KC-355

With respect to the information requested in Mr. Sapirie's letter of March 15, 1956, to Mr. Center on the above subject, there were no known abnormal activities, including those of a type which would be likely to cause significant changes in the usual gamma radiation pattern, at the Oak Ridge Gaseous Diffusion Plant on any of the dates listed.

As is apparent, the cascade inventory of uranium and its daughter products does provide a gamma radiation source. At the low U-235 enrichment part of the cascade (K-33, K-31, etc.), the gamma radiation is predominantly that due to the high energy gammas of the U₂ daughter of U-238; as the U-235 enrichment increases, the low energy gammas of the U-235 become increasingly important until the radiation at the highest enrichment sections of the cascade (K-306, K-305, etc.) is almost entirely due to this isotope. During the entire period in question, a large quantity of uranium of low U-235 enrichment was stored in K-311-1; in addition, comparatively large quantities of product material were kept in the K-312 section.

In addition to the cascade, there are normally significant inventories of uranium of low U-235 enrichment in the K-1131, K-1110, K-1113, and K-131 buildings with smaller quantities of material of various enrichments in the K-1120 and K-1101 buildings; there is also a relatively large shielded radium source in Laboratory K-1001-B.

We would be interested in knowing the results obtained during these tests as related to the instruments used in order that we might attempt their correlation with our own data.

✓ HPH:1ja

NoK25RC

aph
A. P. Huber

SECRET

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2/16/56

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Meeting

~~SECRET~~

2. Diff. of plants 1. Same as here last year
K-25 - Jans. Jans. Richey, Anderson.
JEC - Jans. Jans. Richey, Anderson.

Others -

1. Diff. of interests

2. Results obtained

3. Samples - 4x0, mud, vegetation

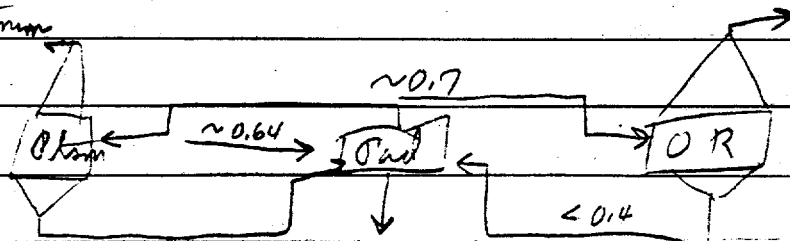
4. Ind. grass 9d. - at tail assay of plants (Sept. 235) env. 23

5. Needed - accurate assays of feed, prod., tails (here: Pad.)

6. Survey of flow sheet for K-25 Plant, Pad (incl. Hanf. & Sars)

7. DML - 2-mat. (tails) stored in Cl₂ cyl. in field.

8. Vanthum



~~NATIONAL SECURITY~~
~~INFORMATION~~

Unauthorized Disclosure Subject to
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is exempt from automatic downgrading and
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Executive Order 11652 and related sanctions.

8.

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-3-

2
P. DML - Sanford mat. made in Fred Clark's house at Pad.
1. mai - "Subst. quan." Sep. 1 from 1-12 stail.

Water . 234 235 236 *paid/mid.*

Poplar Creek .0117 1.87 .0158 0.11

1500 HE K-25

10 waste - .13 for 36.

Classification changed to:

UNCLASSIFIED

(level and category)

Thomas W. Kelly 12/11/93
ADC or ADD signature (first reviewer) Date

[Signature] 12 Feb 94
ADD signature (initial reviewer) Date

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⑤ $\times 5000 \#$

$$25000 \# = 12,500 \text{ kg}^u = 1.25 \times 10^4 \text{ kg} = 1.25 \times 10^7 \text{ gm} = 1.25 \times 10^{13} \mu\text{g}$$

$$100 \text{ mi} = 5 \times 10^5 \text{ ft} =$$

$$\# \text{ } r^2 \quad \# \times 25 \times 10^{10} \text{ ft}^2 = 75 \times 10^{10} \text{ ft}^2 = 10^{12} \text{ ft}^2$$

$$\underline{12.5 \mu\text{g} / \text{ft}^2} = 75 \mu\text{g} / \text{ft}^2$$

2. Questions.

1. ² Put numbers in diagram or sample of stream

↳ effect of plank on 76 and 24.

↳ Variation of values (history)

2. ² Best estimate of losses.

= " " " " " "

↳ Major inadvertent losses

↳ Total losses

Classification changed to:

UNCLASSIFIED

(level and category)

ADD signature (first reviewer)

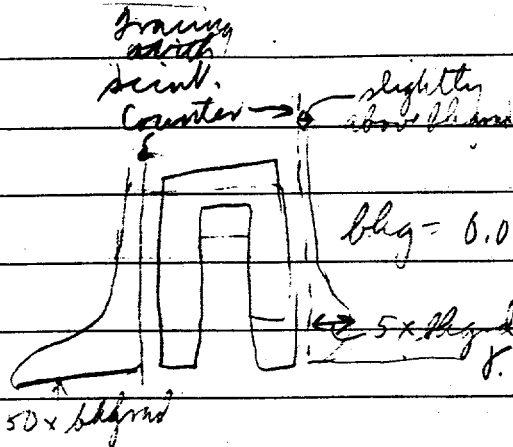
ADD signature (final reviewer)

Date

3.

Otom & Pad.

give same
appear, but
max. lower.



$$b_{hg} = 0.01 - 0.001 \text{ m/s}$$

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2. ChemRisk/Shonka Research Associates
3. S. G. Thornton (K-25 EMD)
4. DOE Public Reading Room